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10/539,378	02/06/2006	Enrico Calamai	0341-008	4610

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EXAMINER	
COMLEY, ALEXANDER BRYANT	
ART UNIT	PAPER NUMBER
3746	

NOTIFICATION DATE	DELIVERY MODE
02/22/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

tammy@ppglaw.com
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Office Action Summary	Application No.	Applicant(s)	
	10/539,378	CALAMAI, ENRICO	
	Examiner	Art Unit	
	ALEXANDER B. COMLEY	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 December 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

1. The Examiner acknowledges receipt of Applicant's amendments, remarks, and arguments filed with the Office on December 10th, 2009 in response to Non-Final Office Action mailed by the Office on July 10th, 2009. Per Applicant's response, Claims 6, 10, and 18 have been amended. Claims 1-5 remain cancelled due to a prior amendment. All other claims remain in their previously presented form. Therefore, Claims 6-23 remain pending in the instant application. The Examiner has carefully considered each of Applicant's amendments and arguments, and they will be addressed below.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 6-8, 10-12, 14-20, and 22-23** rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 5,209,076 to Kauffman et al. (Kauffman) directed to a Control System for Preventing Compressor Damage in a Refrigeration System.

Regarding Independent **Claims 6, 10, and 18**, Kauffman begins by disclosing a microprocessor-based compressor control device (i.e. computer readable medium) that detects abnormalities in a compressor's operation through implementation of a control

method. To begin, Kauffman system uses 1) sensed compressor conditions (i.e. measured parameters), 2) manually entered data (i.e. high and low safety ranges), and 3) reference parameters stored in a database (i.e. timeout periods) by stating, "If a sensed condition is outside of a safety range and remains there for a time out period, an alarm condition is indicated and the device generates an alarm signal and shuts down the compressor." (Abstract) Kauffman further discloses measured parameters and manually-entered parameters by stating, "In accordance with the invention, a microprocessor based monitoring device makes use of sensors which detect various conditions at selected locations in a refrigeration system. Pressure and temperature sensors on the suction side of the compressor provide information that allows the superheat to be computed. High and low safety limits for the superheat of the particular refrigerant can be entered. If the actual superheat falls outside of the programmed safety range, the compressor is automatically shut off and alarm signals are generated to indicate the presence of problem conditions." (Column 1, Line 64 – Column 2, Line 6) It is apparent in Kauffman that the measured parameters and the manually-entered parameters correspond to intake and/or discharge pressures and/or temperatures of the compressor (See Col. 3, Line 50 - Col. 4, Line 5) Applicant's third set of parameters (the reference parameters) are disclosed by Kauffman's "timeout periods". Applicant still does not define in the claims exactly what the reference parameters correspond to; but merely claims that they "relate to the operating state of the compressor". Therefore, Kauffman's timeout periods, which directly relate to whether or not a compressor abnormality is detected, can be considered reference parameters indicating the

operational state of the compressor. In regards to these timeout periods, Kauffman states "Additional sensors monitor conditions such as the compressor discharge pressure and temperature, motor current draw and oil pressure. Again, safety limits are entered and the device automatically shuts down the compressor and provides an alarm signal if the system is operating outside of a safe operating range with respect to any of the conditions that are being monitored. In order to prevent aberrational or transient conditions from shutting down the compressor, each parameter that is being monitored is given a time out period during which an abnormal condition must continue before shut down occurs." (Column 2, Lines 7-19) A user can program various timeout periods for varying operating conditions relating to the compressor in order to accurately and efficiently protect the compressor from abnormal operation conditions. And finally, Kauffman also discloses reading operating parameters from a design program (i.e. programmed look up table) to insure a compressor's adherence to standardized, pre-calculated design specifications (i.e. superheat quality). To begin, Kauffman states "The presence of unduly wet refrigerant at the compressor intake is caused by a lack of superheat on the suction side of the compressor. Conversely, if the superheat is excessive, the cooling effect of the refrigerant on the compressor is reduced. This can result in overheating of the compressor motor and/or the valves and high friction areas of the compressor. If the suction pressure is unduly low, the refrigerant gas is not present in the system in sufficient amounts to adequately cool the compressor. Adverse consequences such as overheating of the motor or other parts of the compressor can result from this condition." (Col. 1, Lines 43-54) Hence, the superheat of the gas is

directly related to the pressure and temperature at a given location in the compressor. In order to monitor the superheat (i.e. temperature/pressure), Kauffman's system utilizes a design program (or stored look-up table) that contains design specifications related to the superheat condition of the gas given a pressure and temperature at a sensed location within the compressor. In particular, Kauffman states "One of the principal functions of the device 38 is to effect automatic shut down of the compressor 10 in the event that the suction line 32 contains undue amounts of liquid refrigerant. For the refrigerants that are commonly used, data exists in the form of tables indicating at different pressure and temperature conditions whether or not there is a superheat condition present corresponding to a fully gaseous state of the refrigerant. These data are entered into the device in the form of look up tables stored in the PROM 86. Thus, for each combination of suction pressure and temperature sensed by the temperature sensor 40 and the pressure transducer 42, the look up tables contain a particular superheat value which is determined in block 130." (Col. 7, Lines 22-36) Hence, Kauffman's system utilizes the design specifications (i.e. operating parameters) stored within a program of the control system in another comparison in order to determine if the compressor system is functioning to spec relative to sensed temperature and pressure inputs. To conclude, Kauffman's monitoring system can read parameters (i.e. temperature, pressure, time out periods, and superheat values) that are either sensed or pre-calculated by design programs (i.e. look-up tables) in order to provide an improved monitoring system for the compressor. And finally, Kauffman's system even utilizes previously stored anomalies stored within control system to

indicate the exact nature of the fault. In particular, Kauffman states "Preferably, the device 38 is provided with a face panel that includes a series of LEDs, one indicating when the power for the unit is on, another indicating a superheat failure condition, another indicating a high current failure condition, another indicating a low suction pressure failure condition, another indicating a high discharge temperature failure condition, another indicating a high discharge pressure failure condition, another indicating a low oil pressure failure condition, and the last indicating that the unit has been reset twice. These LEDs are controlled by the alarm circuits 98. If desired, the alarm circuits may energize an audio alarm in the event of a failure condition." (Col. 4, Lines 58-67) Kauffman goes on to say "At the same time, the relay circuit 94 activates the alarm circuits 98 in order to energize the alarm LED associated with the fault condition. The LED provides a visual indication of the particular condition that is abnormal (such as an unduly low suction pressure indicating that insufficient refrigerant is in the system or an unduly low superheat indicating that too much liquid refrigerant is present at the suction or intake to the compressor 10). If a modem is present and connected with the microprocessor through circuit 104, a selected telephone number can be automatically dialed to provide a telephone message indicating that the compressor has been shut down because of a fault condition. Appropriate personnel who are off-site can thus be alerted by telephone that there is a problem." (Col. 9, Lines 8-23) From this disclosure, it is apparent that each LED light corresponds to a particular fault condition, and therefore constitutes previously stored anomalies within the control system. To conclude, from the disclosures listed above, it is apparent that multiple

comparisons are repeatedly completed (as is apparent from the use of varying timeout periods for different compressor parameters) between the four types of compressor parameters in order to efficiently detect abnormalities over the span of the compressor's.

4. In regards to dependent **Claims 7-8, 11-12, & 19-20**, Kauffman specifically discloses utilizing the monitoring system to insure a compressor's adherence to observed operating trends (i.e. design specifications) stored in the look-up table (See Col. 7, Lines 22-36). Hence, Kauffman's system utilizes design specifications (i.e. operating characteristics) in another comparison in order to determine if a particular compressor system is functioning to spec. This disclosure shows that Kauffman's monitoring system can read parameters (i.e. temperatures, pressures, time out periods, and superheat values) in order to provide a great degree of protection for the compressor. Regarding dependent **Claims 14, 16, & 22**, the comparisons done by the Kauffman's monitoring system are done repeatedly (as is apparent from the use of multiple timeout periods for different compressor parameters) while the compressor is operating, thereby providing a large number of independent comparisons throughout the compressor's operation (It is important to note that Applicant does not specify when the first and second comparisons are done in relation to one another). In regards to dependent **Claims 15, 17, & 23**, Kauffman specifically discloses the use of displays to show the presence of compressor faults by stating "A detachable display module includes a keypad for carrying out field programming and a LCD screen for displaying

the refrigerant conditions and programming prompts and commands." (Abstract) Kauffman goes on to say "Preferably, the device includes a display such as a liquid crystal display, along with a key pad for entering program commands and functions and LED indicators for identifying alarm conditions. The data can be displayed on the LCD screen on the unit, it can be printed out by a printer, or it can be transmitted via a modem over telephone lines to allow display on a remote computer screen. Alternatively, the unit can be programmed to automatically dial a programmed telephone number in the event of a compressor shut down so that appropriate personnel are alerted to the problem and can take whatever corrective action is indicated under the circumstances." (Col. 2, Lines 45-58)

5. **Claims 9, 13, & 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 5,209,076 to Kauffman et al. in view of United States Patent No. 6,448,982 to Klapper et al. directed to a System for Graphically Generating Logic for a Cause and Effects Matrix..

The Klapper et al. portion of the combination discloses the use of a "cause-and-effect" matrix for use in a monitoring system. Moreover, Klapper specifically discloses a matrix database and corresponding digital computer by stating "The system includes a general purpose digital computer that incorporates a matrix programming tool to input data defining the matrix and generate a matrix database. The tool also transfers the matrix database to a programmable logic controller." (Abstract) Furthermore, with particular reference to Figure 1 of Klapper, it can be seen the multiple critical limits are

placed in each row of the matrix with corresponding descriptions of the specific corresponding anomalies. Some examples of Klapper's system anomalies include high process flow and high or low fuel pressures. Klapper goes on to describe the structure of the control matrix by stating "The present invention enables a user to graphically create and configure a matrix with data that defines input elements or variables that require monitoring, output responses to changes in the input elements/variables, also referred to as input parameters, being monitored and the relationship between the input elements/variables and the output responses. Once the matrix is created, the user can transfer the defining data to a programmable logic controller 78 to generate logic to implement the matrix. The programmable logic controller 78, as illustrated in FIG. 2 may comprise a central processing unit 7, an input device 9, an output device 11, and a memory element 13. The memory element 13 may be a combination of read only memory (ROM) and random access memory (RAM)." (Column 3, Lines 40-53) Klapper further states that a user can add specific anomalies to the matrix in order to monitor various desired aspects of the system. Therefore, to one of ordinary skill desiring a more accurately controlled compressor system, it would have been obvious to utilize the techniques disclosed in Kauffman in combination with those seen in Klapper et al in order to obtain such a result. Consequently, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the monitoring system of Kauffman with the anomaly-specific matrix of Klapper et al. in order to obtain predictable results; those results being a more accurately controlled compressor system that monitors specific anomalies.

Response to Arguments

6. Applicant's arguments with respect to claims 6-23 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER B. COMLEY whose telephone number is (571)270-3772. The examiner can normally be reached on M-F 7:30am - 5:00am EST (Alternate Fridays Off). If attempts to reach the examiner by telephone are

unsuccessful, the examiner's supervisor, Devon C. Kramer can be reached on (571)-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander B Comley/
Examiner, Art Unit 3746

/Charles G Freay/
Primary Examiner, Art Unit 3746

ABC